ABSTRACT

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Optimization of cultivation conditions for plant tissue culture of *Catalpa bignonioides* grown in bioreactor

Abstract

This advanced master thesis is focused on cultivation of plant cultures in vitro. In addition impact of sampled phytohormones (naphthylacetic acid – NAA, benzylaminopurine – BAP, 2,4 – dichlorphenoxyacetic acid – 2,4 – D) and impact of sampled precursors (sodium mevalonate, oxaloacetic acid, phenylalanine) on production of secondary metabolites is duly evaluated. Volume of iridoids and phenylpropanoic acids is measured using HPLC method. Use of phytohormones increases the volume only when applying NAA of caffeic acid. Neither grow ratio nor total volume of biomass are impacted by application of phytohormones. Sodium mevalonate is most affecting the grow ratio when used in concentration c_2. Volume of catalpol has increased by 700% in 168 hours; volume of caffeic acid has increased in 260% in the same timeframe. On the contrary, oxaloacetic acid decreases the volume of caffeic acid in comparison to control sample. Phenylalanine has the higest impact on volume of caffeic acid (633% in 168 hours) when used in concentration c_2.